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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,268	01/08/2002	Charles Leu		7873

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EXAMINER	
PRITCHETT, JOSHUA L	

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 06/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/044,268	LEU ET AL.	
	Examiner	Art Unit	
	Joshua L Pritchett	2872	

-- The MAILING DATE of this communication appears on the cov r sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 7-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 7-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This action is in response to Appeal Brief filed February 18, 2004. All applicant's arguments have been considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pelekhaty in view of Rancourt (US 4,846,551).

Regarding claim 1, Pelekhaty teaches a thin film filter for dense wavelength division multiplexing, the filter comprising a glass substrate (200), a film stack comprising a plurality of cavities (178, 182, 180; Fig. 11) wherein each cavity comprises a first mirror layer (194 for cavity 180) and a second mirror layer (176 for cavity 180) on the glass substrate comprising low refractive index thin films (68) and high refractive index thin films (66), by stating that one film has a high refractive index and the other film has a low refractive index Pelekhaty inherently states that a substantial difference exists between the refractive index of the alternating layers

(col. 6 lines 54-55). Pelekhaty lacks reference to the high refractive index thin film comprising indium tin oxide. Pelekhaty teaches instead the use of zirconium oxide (col. 5 line 29). Rancourt teaches that it is known in the art that indium tin oxide may be substituted for zirconium oxide (col. 4 lines 20-22) as a high refractive index layer. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the indium tin oxide film taught by Rancourt in the Pelekhaty invention for the purpose of having a film with low resistance to light transmission and high scratch resistance.

Regarding claim 11, Pelekhaty teaches a thin film filter for dense wavelength division multiplexing, the filter comprising a glass substrate (200), a film stack comprising a plurality of cavities (176, 182, 180; Fig. 11) on the glass substrate comprising low refractive index thin films (68) and high refractive index thin films (66). Pelekhaty further teaches the number of layers in a film stack with five cavities would be about 160. It has been held that it is within the ability of one of ordinary skill in the art to duplicate parts of a structure. The claim limitations relating to the number of cavities (5) and the number of layers (160) are obvious duplication of the known parts of the Pelekhaty reference, and therefore are not patentable over the prior art. Pelekhaty lacks reference to the high refractive index thin film comprising indium tin oxide. Rancourt teaches the use of indium tin oxide instead of zirconium oxide (col. 4 lines 20-22). Indium tin oxide is known to have a refractive index of about 2.1. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the indium tin oxide film taught by Rancourt in the Pelekhaty invention for the purpose of having a film with low resistance to light transmission and high scratch resistance. One would further have been

motivated to duplicated the parts of Pelekhaty for the purpose of further eliminating any stray light in the output beam of the filter and thus making the filter transmission more selective.

Claims 2-3, 8-10 and 12-14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelekhaty in view of Rancourt as applied to claims 1 and 11 above, and further in view of Adair.

Regarding claims 2 and 12, Pelekhaty in combination with Rancourt teaches the invention as claimed but lacks reference to a coupling film. Adair teaches the use of a coupling film (718) and the coupling film adjoins an adjacent cavity of the plurality of cavities (Fig. 7A). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the coupling film of Adair in the Pelekhaty invention for the purpose of coherently coupling light between the successive cavities.

Regarding claims 3 and 13, Pelekhaty in combination with Rancourt teaches the invention as claimed including the use of an alternating refractive index structure (Fig. 11) but lacks reference to the coupling film having a low refractive index. Adair teaches that mirrors are formed of a stack of alternating dielectric films (col. 5 lines 54-55). It is commonly known in the art to have the high refractive index layer of the mirror contacting the cavity (see Pelekhaty Fig. 11 and Goosen Fig. 3). Based on Fig. 7A, the alternating formation of Adair and the commonly known practice of placing the high refractive index layer contacting the cavity Adair shows the coupling layer (718) to be a low refractive index film. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the coupling film be a low refractive index film as taught by Adair for the purpose of limiting the amount of light reflected between the interface of two adjoining cavity structures.

Regarding claims 8 and 14, Pelekhaty in combination with Rancourt teaches the invention as claimed but lacks reference to the low refractive index material being silicon or aluminum oxide. Adair teaches the use of silicon oxide (col. 6 line 46) as the low refractive index material in combination with indium tin oxide (col. 6 lines 20-21) as the high refractive index material. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the low refractive index layer of Pelekhaty comprise silicon oxide as taught by Adair for the purpose of allowing the filter to be adjustable for use in a wider range of applications.

Regarding claim 9, Pelekhaty teaches the high and low refractive index materials alternating in the film stack (Fig. 11).

Regarding claim 10, Pelekhaty teaches the high and low refractive index thin films have an optical thickness of one-quarter wavelength (col. 6 lines 54-55).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelekhaty in view of Rancourt and Adair as applied to claim 3 above, and further in view of Goossen (US 5,914,804).

Pelekhaty in combination with Mitsui and Adair teaches the invention as claimed but lack reference to the optical thickness of the spacer layer being a multiple of a quarter wavelength. Goossen teaches a spacer layer with an optical thickness of one half wavelength (Fig. 3). One half wavelength is equal to two times a quarter wavelength. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the spacer layer of

Pelekhaty have the optical thickness taught by Goossen for the purpose of limiting the size of the film stack and therefore increasing the space efficiency of the optical filter.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelekhaty in view of Rancourt as applied to claim 1 above, and further in view of Mitsui.

Pelekhaty in combination with Rancourt teaches the invention as claimed but lacks reference to claimed composition of the indium tin oxide layer. Mitsui teaches the claimed composition (col. 2 lines 38-40). Mitsui teaches the compound having an indium content being between 0.1 and 30 percent and a gallium content of 0.1-30 percent. Therefore the claimed range of 17-20 percent of indium oxide and 83-80 percent of tin oxide is taught by the anticipated by Mitsui. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the composition taught by Mitsui in the Pelekhaty invention for the purpose of having the thin film layer have low resistance to light transmission and a high resistance to scratching.

Response to Arguments

Applicant's arguments, see Appeal Brief, filed February 18, 2004, with respect to the rejection(s)of claim(s) 1-3 and 7-14 under Pelekhaty in view of Mitsui have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Pelekhaty in view of

Rancourt. Claim 1 was amended following the non-final rejection dated April 1, 2003, therefore this rejection is made final based on the amendments to claim 1 filed June 30, 2003.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L Pritchett whose telephone number is 571-272-2318. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLP

DREW A. DUNN
SUPERVISORY PATENT EXAMINER